



REVIEW ARTICLE

# Pandemic impacts of school closures and confinement on child psychosocial and cognitive development

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## ABSTRACT

**Introduction:** In 2019, a novel coronavirus emerged and rapidly spread worldwide, leading governments to adopt restrictive measures such as lockdowns and school closures. These measures significantly affected children's routines and may have impacted their psychosocial and cognitive development.

**Objective:** To analyze the impacts of the COVID-19 pandemic on child development, particularly regarding psychosocial and cognitive aspects.

**Methodology:** This study consists of a systematic review. Searches were conducted using descriptors identified in Medical Subject Headings in the PubMed database and the Virtual Health Library. Articles published in Portuguese, English, and Spanish within the last five years were considered. Inclusion and exclusion criteria were applied to select studies addressing the effects of the pandemic on children's development.

**Results:** A total of 24 articles were initially identified. After applying the eligibility criteria, three studies were selected for analysis. The selected studies highlighted significant changes in children's routines, including reduced social interaction, decreased physical activity, interruptions in medical follow-up, and limitations in educational activities.

**Conclusion:** The findings indicate that pandemic-related restrictions may negatively affect children's psychosocial and cognitive development. Strategies aimed at mitigating these impacts and promoting healthy child development are essential.

**Keywords:** Covid-19, children, child development, developmental impacts, school closures, confinement.

## 1 Introduction

In 2019, China faced a new virus that is part of a family of pathogenic agents responsible for respiratory infections. As of October 2021, the virus had spread exponentially across the globe and had already caused nearly 4.85 million deaths worldwide<sup>1</sup>.

With the arrival of the virus in Brazil at the beginning of 2020, approximately 30,000 cases and nearly 2,000 deaths had been recorded by mid-April 2020. Initially, these numbers were lower than those observed in many countries facing critical situations. However, a significant shift in the pandemic scenario in Brazilian territory became evident, as Brazil emerged as one of the epicenters of COVID-19 due to the increase in cases, daily deaths, and accelerated viral spread, placing substantial strain on the healthcare system and health professionals<sup>2</sup>.

Public health recommendations and governmental measures implemented during the coronavirus disease pandemic imposed numerous restrictions on daily life, including social distancing, isolation, and home confinement. Although such measures are imperative to mitigate the spread of COVID-19, the impact of these restrictions on psychosocial health remains unclear<sup>3</sup>.

The pandemic has produced broad repercussions on child health and development through exposure to the virus and subsequent infection, in addition to the aforementioned recommended or mandatory confinement aimed at slowing the progression of COVID-19, ensuring adequate medical care, and preventing the collapse of healthcare systems. Potential risks for children include losses in brain development, individual and collective health, as well as long-term impairment of mental and physical cognition<sup>4</sup>.

The incidence of domestic violence and child maltreatment tends to increase during confinement and, consequently, children are more susceptible to greater risks when living in overcrowded households, such as families with six to seven children or with unemployed parents. Beyond these issues, concerns have been raised regarding the adequacy of support for vulnerable groups, such as children with learning difficulties, neurological disorders, diabetes, attention-deficit/hyperactivity disorder, autism spectrum disorder, depression, and anxiety. School closures may be even more

devastating due to the lack of resources and in-home support that schools often provide. Conversely, interactions between parents or caregivers and children have become even more crucial during the challenging period of confinement<sup>5</sup>.

Several studies have highlighted that prolonged school closures and social isolation may significantly affect children's cognitive, emotional, and social development. Reduced peer interaction, changes in daily routines, and increased exposure to stressful home environments have been associated with behavioral changes, learning difficulties, and mental health challenges among children. However, the magnitude and nature of these impacts remain under investigation<sup>6</sup>.

This article is an integrative review that aims to contribute to the construction of a knowledge base focused on the following research question: What are the impacts on child development during the COVID-19 pandemic compared with the pre-pandemic period?

## 2 Methods

The present study is a systematic review, designed in accordance with the methodological principles recommended for this type of investigation, following the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020)<sup>7</sup> and the Cochrane Handbook for Systematic Reviews of Interventions<sup>8</sup>. Systematic reviews aim to answer a previously established key question, allowing for a critical and structured analysis of the existing scientific literature on the topic under investigation. The development of a systematic review fundamentally begins with the formulation of a clear research question, which guides the definition of the study objectives and underpins all subsequent stages of the review process<sup>9</sup>.

In this context, the following research question was formulated: What are the impacts on child development during the COVID-19 pandemic compared with the pre-pandemic period? This question was established using the PICO strategy (Population, Intervention, Comparison, and Outcome), recognized as an effective tool for constructing guiding questions in systematic reviews<sup>9</sup>. The population considered comprised school-aged children; the intervention referred to school closures and confinement resulting from the

COVID-19 pandemic; the comparison corresponded to the pre-pandemic period; and the outcomes included changes in psychosocial and cognitive child development.

To identify relevant studies, a systematic search was conducted in the electronic databases SciELO, Virtual Health Library (VHL), and PubMed. Articles published between 2020 and 2021 in English, Portuguese, and Spanish were selected. The search descriptors were chosen based on Medical Subject Headings (MeSH), DeCS, and the controlled vocabulary of the VHL. The terms used included: COVID-19, Intellectual Disability, Learning Disabilities, Child Rearing, Child, and Child Development. Search strategies were developed by combining these descriptors using Boolean operators (AND and OR), as presented in Table 1.

The application of the search strategy resulted in the identification of 24 articles. Inclusion criteria comprised: articles published within the last five years, written in English, Portuguese, or Spanish, available in full text, and published in scientific journals. Exclusion criteria included articles in non-eligible formats (abstracts, letters to the editor, editorials), as well as books, dissertations, and

book chapters. Additionally, during the screening and full-text review phases, studies focusing exclusively on family relationships, hospital-based physician–child interactions, region-specific research, or studies addressing only childhood diseases within the school environment were excluded.

After applying the eligibility criteria, three articles were selected to compose the final sample of the review. These studies met the proposed objectives and directly addressed the research topic. Conversely, eighteen articles were excluded for not presenting a direct relationship between school closures and confinement and their impacts on psychosocial and cognitive child development, as defined by the objectives of this study.

The analysis of the selected studies followed a descriptive and quantitative approach, in accordance with the methodological criteria recommended for systematic reviews. The stages of article selection were illustrated using a flow diagram, as suggested by PRISMA 2020<sup>7</sup>. Critical appraisal of risk of bias and study quality was conducted based on methodological criteria established in the current scientific literature<sup>8,13</sup>.

**Table 1.** Results of search strategies and article selection

Search Strategies (Combined Descriptors)	Database	Search Results (No. of articles)	Articles selected		
			After Title Screening	After Abstract Screening	After Full-Text Reading
((Covid-19) AND (Intellectual Disability)) AND (learning disabilities) AND (child)	Mesh	6	2	2	2
((covid 19) AND (Child rearing))	Mesh	13	2	2	0
((learning disabilities) AND (child development)) AND (covid19)	BVS	5	2	2	1
<b>TOTAL</b>		24	6	6	3

**Note:** A five-year filter was applied to all search strategies.

### 3 Results

A total of 24 articles were initially identified in the databases. After applying the inclusion and exclusion criteria, three studies were selected for full analysis.

Among the selected studies, 67% addressed the consequences experienced by children as a result of the COVID-19 pandemic and the social isolation required to prevent viral transmission, including learning difficulties, neurological disorders, diabetes, attention-deficit/hyperactivity disorder, autism spectrum disorder, depression, and anxiety. The remaining 33% focused on strategies considered

essential for better adaptation and continuity of care for children, such as telerehabilitation and distance learning.

As presented in Table 1, the included studies addressed three main themes: the consequences of the pandemic on children's physical activity levels<sup>10</sup>; the role of teletherapy in children with special needs<sup>11</sup>; and the effects of school closures on children's education, development, and socialization<sup>12</sup>.

In the first study, most participants reported reduced levels of physical activity during the pandemic, and more than 90% indicated that their mental health had been affected<sup>10</sup>. The second

study reported that patients who did not use telerehabilitation were at greater risk of mental health problems, while negative perceptions regarding home-based therapy were also identified<sup>11</sup>. The third study demonstrated that school closures resulted in attenuated learning gains, particularly among children already at risk of educational disparities, in addition to increased physical and mental health challenges for some young individuals<sup>12</sup>.

## 4 Discussion

The COVID-19 pandemic led governments worldwide to implement restrictive measures, including lockdowns and social distancing policies, which significantly altered daily routines and access to essential services for children and their families. These restrictions affected not only educational activities but also opportunities for social interaction and physical activity<sup>3</sup>.

Social isolation has been identified as one of the main factors affecting children's mental health during the pandemic. Previous studies have shown that prolonged periods of reduced social interaction and limited outdoor activities may contribute to increased levels of anxiety, depression, and emotional distress among children and adolescents<sup>6</sup>. Recent longitudinal reviews confirm that these effects persisted over time, with significant impacts on quality of life and mental health indicators<sup>14</sup>.

The disruption of daily routines and educational activities may also have long-term consequences for child development. Evidence suggests that the pandemic may negatively affect cognitive, emotional, and social development, particularly during early childhood when environmental stimulation plays a crucial role in developmental processes<sup>4</sup>. Neuropsychological studies further highlight cognitive and emotional difficulties among children exposed to prolonged confinement<sup>15</sup>.

Furthermore, the pandemic highlighted important inequalities affecting children from different social contexts. Studies have demonstrated that children living in more vulnerable environments may experience greater developmental and psychological impacts due to limited access to educational resources, reduced support networks, and increased family stress<sup>5</sup>. Systematic reviews emphasize that

children in low-resource settings suffered disproportionately, reinforcing the need for targeted interventions<sup>16</sup>.

The findings of the studies included in this review reinforce these concerns. In addition to the three studies included in the final analysis, recent reviews and empirical studies provide broader evidence that reinforces these findings<sup>14-17</sup>. The reduction in physical activity levels and the deterioration of mental health reported during the pandemic demonstrate how changes in daily routines may negatively influence children's well-being<sup>10</sup>. In addition, the use of teletherapy emerged as an important strategy to ensure continuity of care for children with special needs during periods of social distancing<sup>11</sup>. Finally, school closures represented a major disruption to children's education and socialization, potentially contributing to learning losses and developmental challenges<sup>12</sup>.

Early studies highlighted the vulnerability and resilience of children during the initial stages of the pandemic<sup>5</sup>, while more recent systematic reviews and meta-analyses have focused on interventions to build resilience and mitigate psychosocial impacts<sup>17</sup>. Evidence also suggests that resilience-building interventions can effectively reduce some of these negative psychosocial effects<sup>17</sup>.

These findings highlight the importance of developing public health and educational strategies capable of mitigating the developmental and psychological consequences of large-scale public health crises on children.

This review has some limitations that should be considered. The number of studies included in the final analysis was relatively small, which may limit the generalization of the findings. In addition, differences in study design and methodology among the selected articles may have influenced the interpretation of the results.

## 5 Conclusion

The findings of this integrative review indicate that the COVID-19 pandemic significantly affected children's development in multiple domains. Social isolation, school closures, and restrictions on daily activities contributed to reduced physical activity, increased psychological distress, and disruptions in educational processes.

In addition, children with special needs were particularly vulnerable to these changes, highlighting the importance of strategies such as teletherapy to ensure continuity of care during periods of social distancing.

These results emphasize the need for public health policies and educational strategies aimed at minimizing the developmental and psychological impacts of large-scale crises on children, as well as the importance of maintaining support systems capable of protecting child well-being in similar situations.

### Conflict of Interest Statement:

None.

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